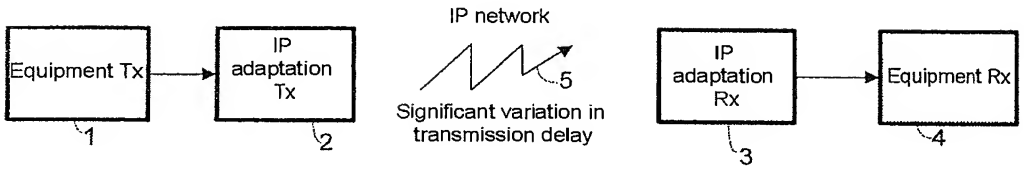
Equipment Tx
IP adaptation Tx
IP network
Significant variation in transmission delay
IP adaptation Rx
Equipment Rx
1
2
5
3
4

Fig 1

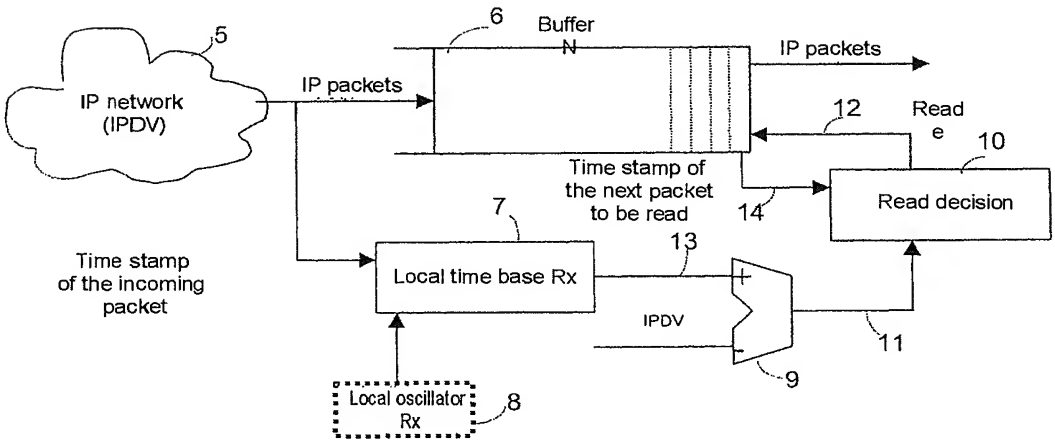
5
IP network (IPDV)
IP packets
6
Buffer N
IP packets
12
Read e
10
Time stamp of the next packet to be read
14
Read decision
7
13
Time stamp of the incoming packet
Local time base Rx
IPDV
11
9
Local oscillator Rx
8

Fig 2

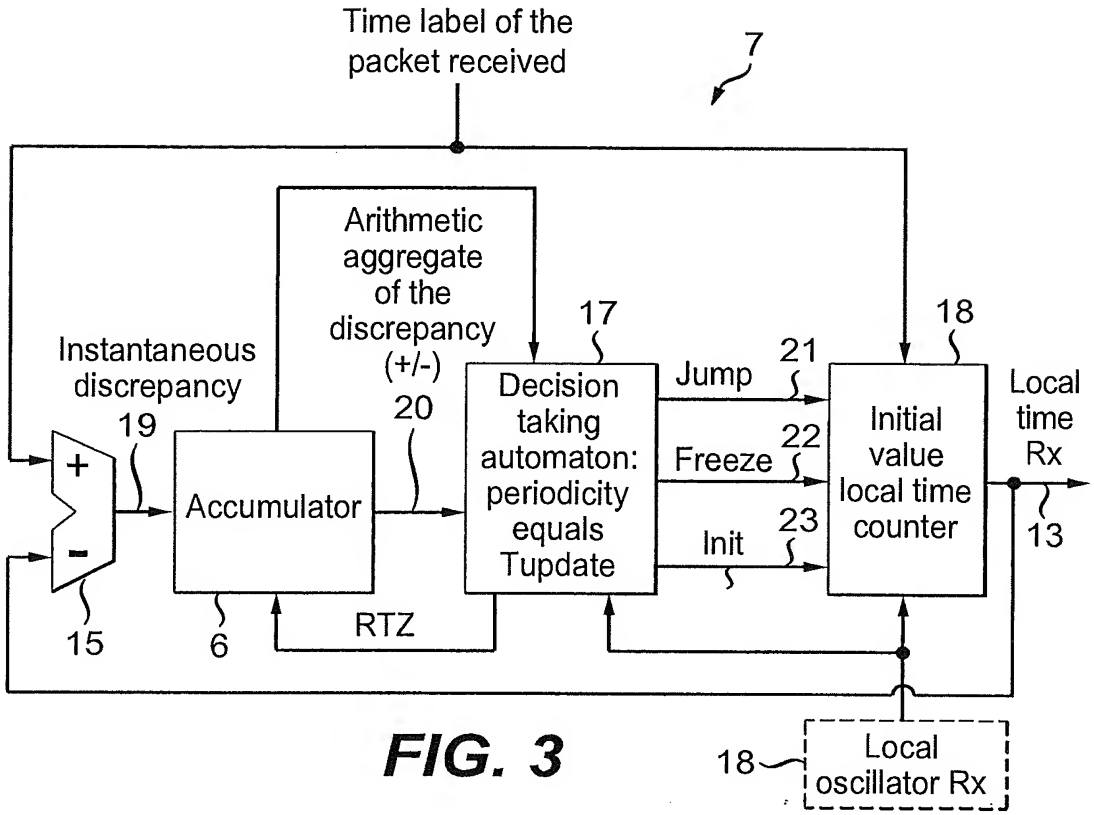
Time label of the packet received
7
Arithmetic aggregate of the discrepancy (+/-)
20
17
18
Instantaneous discrepancy
19
21
Jump
Decision taking automaton: periodicity equals Tupdate
Initial value local time counter
Local time Rx
22
Freeze
23
Init
13
+
-
Accumulator
15
6
RTZ
18
Local oscillator Rx

FIG. 3

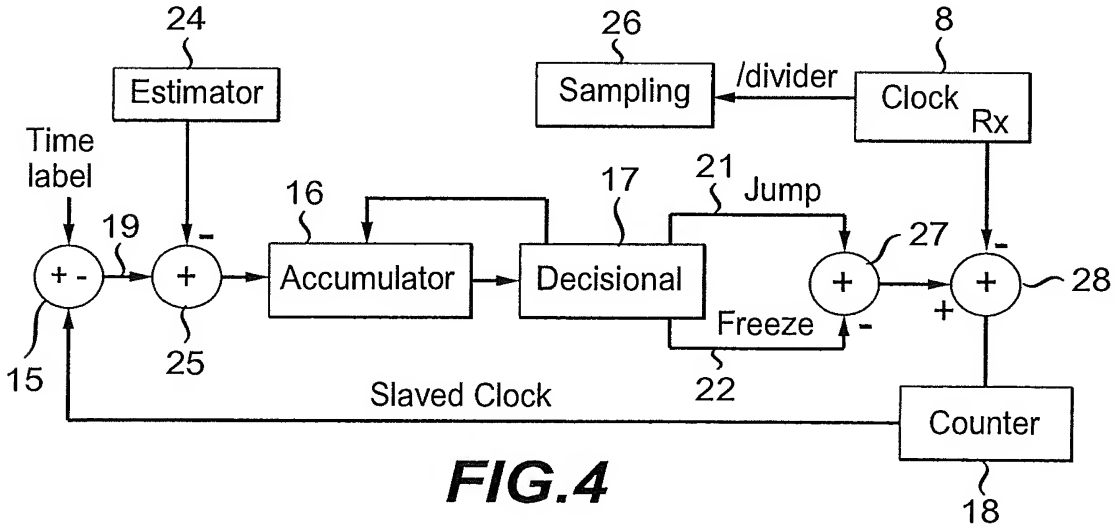
24
Estimator
26
Sampling
/divider
8
Clock Rx
Time label
19
16
17
21
Jump
27
28
+ -
+
Accumulator
Decisional
+
+
Freeze
15
25
22
Slaved Clock
Counter
18

FIG.4

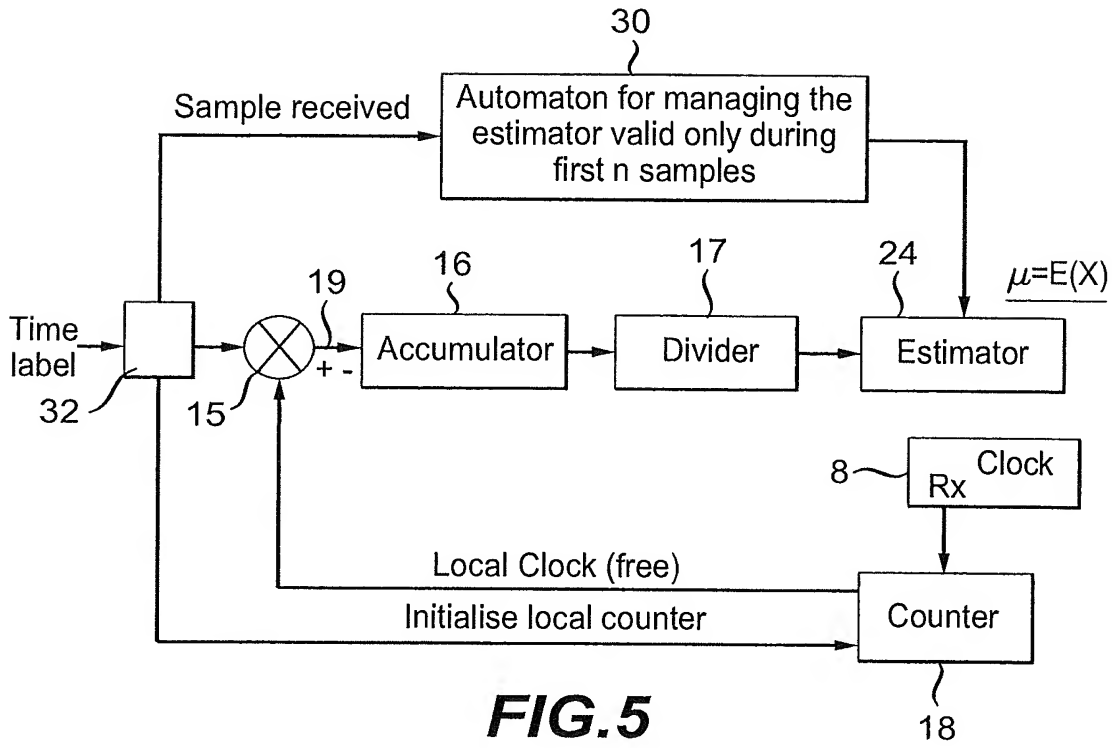
30
Automaton for managing the estimator valid only during first n samples
Sample received
Time label
32
15
19
+ -
16
Accumulator
17
Divider
24
Estimator
μ=E(X)
8
Clock
Rx
Local Clock (free)
Initialise local counter
Counter
18

FIG.5

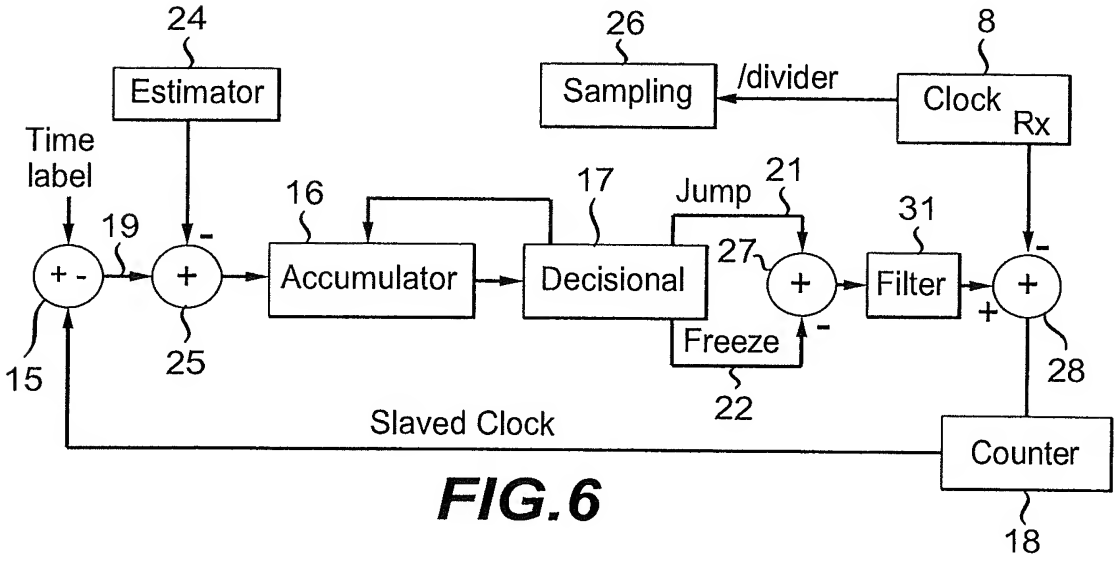
24
Estimator
26
Sampling
/divider
8
Clock
Rx
Time label
19
15
+ -
+
-
25
16
Accumulator
17
Decisional
Jump
21
27
+
-
Freeze
22
31
Filter
+
-
+
28
Slaved Clock
Counter
18

FIG.6

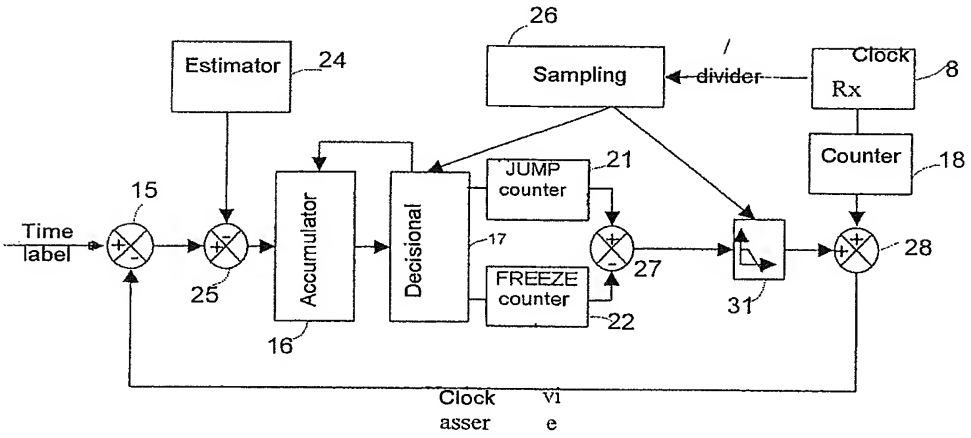
26
Estimator
24
Sampling
divider
Clock
Rx
8
Counter
18
JUMP
counter
21
15
Time
label
Accumulator
Decisional
17
27
28
25
FREEZE
counter
22
31
16
Clock
asser
vi
e

Fig 7

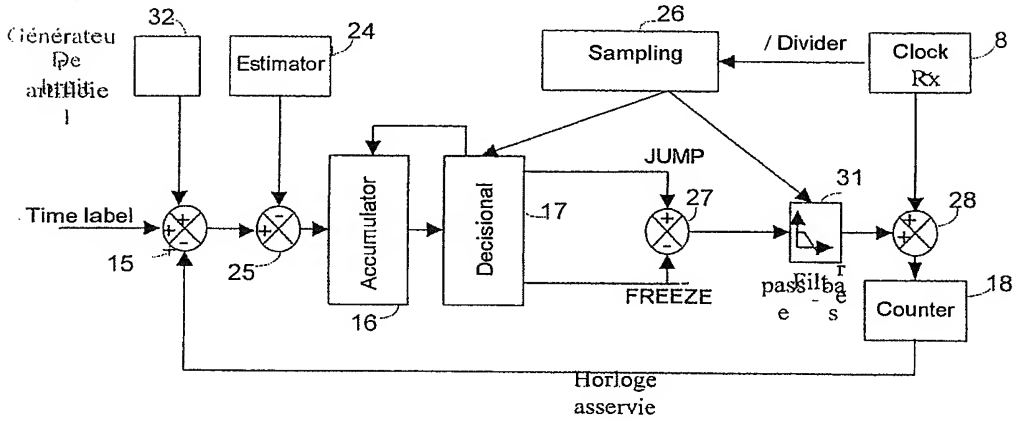
32
Estimator
24
26
Sampling
/ Divider
Clock
Rx
8
JUMP
31
Time label
15
25
Accumulator
Decisional
17
27
28
FREEZE
16
Counter
18
Horloge
asservie

Fig 9

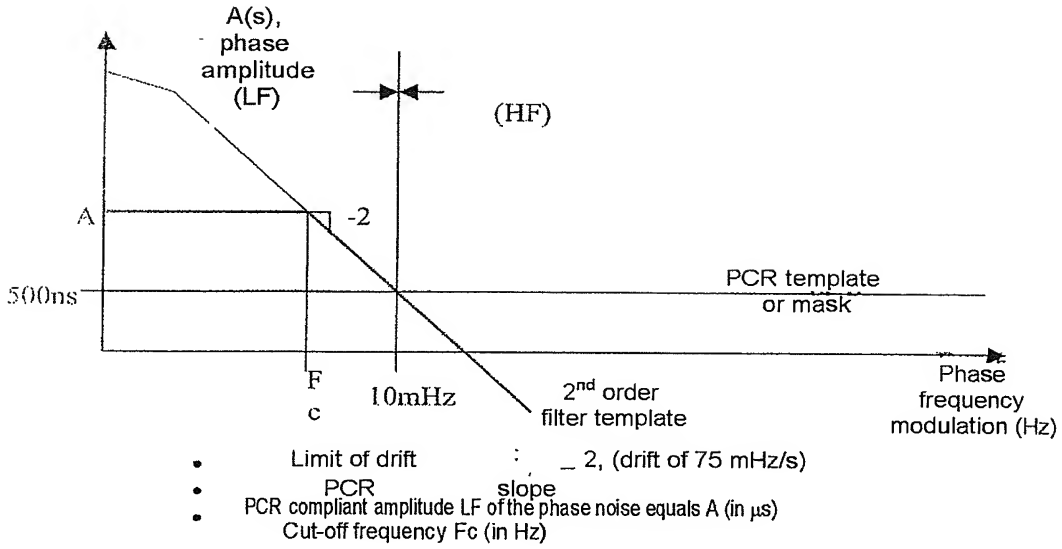
A(s),
phase
amplitude
(LF)
(HF)
A
-2
500ns
PCR template
or mask
F
c
10mHz
2nd order
filter template
Phase
frequency
modulation (Hz)
Limit of drift
PCR
slope
_ 2, (drift of 75 mHz/s)
PCR compliant amplitude LF of the phase noise equals A (in μs)
Cut-off frequency Fc (in Hz)

Fig 8